

QUIVIRA

NARRATIVE REPORT

JANUARY-DECEMBER 1964

Division of Wildlife Refuges

Narrative Report Routing Slip

Refuge QUIVIRA Year 1964

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QUIVIRA NATIONAL WILDLIFE REFUGE

STAFFORD, KANSAS

PERSONNEL

Refuge Manager	- - - - -	Joshua J. Harman
Assistant Refuge Manager	- - - -	Ronald S. Sullivan
Refuge Clerk	- - - - -	Wayne E. Dale
Maintenanceman	- - - - -	Earl Miller
Maintenanceman	- - - - -	Darrell Keesling
Maintenanceman	- - - - -	Delbert Bray
Maintenanceman (WAE)	- - - - -	Harvey Keesling

QUIVIRA NATIONAL WILDLIFE REFUGE
STAFFORD, KANSAS
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JANUARY 1 to DECEMBER 31, 1964

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NARRATIVE REPORT

JANUARY 1 to DECEMBER 31, 1964

I. GENERAL

A. Weather Conditions.

<u>Month</u>	<u>Snow</u>	<u>Precip.</u>	<u>Ave. Precip.*</u>	<u>Max. Temp.</u>	<u>Min. Temp.</u>
Jan.	T	.11"	.68"	67°	-6°
Feb.	T	.38	.91	61	10
Mar.	T	.63	1.21	78	13
Apr.		1.60	2.39	88	24
May		3.22	3.90	100	40
June		1.80	3.80	101	43
July		1.35	3.03	105	53
Aug.		3.14	2.90	108	52
Sept.		1.77	1.81	97	38
Oct.		.20	1.33	82	29
Nov.	T	3.42	.86	78	7
Dec.	<u>5.5</u>	<u>1.46</u>	<u>.81</u>	<u>65</u>	<u>-3</u>
Totals	5.5"	19.08"	23.63"	Extremes 108° F.	-6° F.

*Ave. for period 1931 - 1952 at Hudson, Kansas. Figures taken from U. S. Weather Bureau station at Hudson, Kansas.

Typical Kansas weather prevailed throughout the year. Rainfall, below average most months, gained near the end of the year to leave us 4.55 inches below normal. Wind movement was high most of the year, combining with the dry heat of summer to parch the area. In the early months snowfall was scant and dry, however, early December saw 4 inches of snow followed by a soaking rain which also contained occasional heavy flurries of snow. "Dry and windy" puts it in a nut shell, with temperatures being about seasonal.

Figures in the enclosed table were taken from the U. S. Weather Bureau station at Hudson, Kansas.

B. Habitat Conditions.

1. Water. Water conditions at the close of the period are very good. Water was in short supply to non-existent most of the year, all pools and impoundments being dry and blowing dust, except for a small part of the Big Salt Marsh, for most of the summer. We went into the year below average on rainfall and watched Rattlesnake Creek trickle away as the rains stayed few and far between. By mid-summer all was dry, but early fall brought some rains and rising

water, which with cooler temperatures greatly alleviated the dryness. Lowered evaporation and a little rainfall combined to fill the Little Salt Marsh and when the late fall and early winter rains came it filled to the level of the emergency spillway. This allowed most of our new structures to fill and start the new year in prime shape.

2. Food and Cover. Food has been in plentiful supply for those populations present. Light snow cover in the early months encouraged feeding on scattered grain in surrounding fields and left some standing refuge grain comparatively lightly touched. Waterfowl use decreased with the water level in the spring and summer and food levels remained above the population level, thus food was not a critical factor during the dry months. Maturing milo and green wheat were in sufficient supply by the time the fall flights began to arrive.

Although water was short, food was sufficient for all upland species present throughout the year.

II. WILDLIFE

A. Migratory Birds.

Peak migration populations for the spring were about the same as for last year for white-fronts and slightly lower for Canadas. Whereas last year the two species peaked at the same time - last week of February - this year white-fronts peaked the third week of February - a week earlier than the Canadas. Birds began to trickle back through the first week of October, Canadas leading the pack, and peaked out the middle of November at more than triple the 1963 fall peak. The fall migration this year was later than usual and the peak was sustained longer.

A cannon-trapping program was inaugurated this spring with moderate success. Most white-fronts moved north before the trapping season was sufficiently launched, so the goose catch amounted to 31 Hutchins geese. Greatest trapping success was with pintails, which peaked out at 40,000 during the trapping season. Bands were snapped onto 195 birds. Other birds banded include 18 mallards and five widgeons, all birds being taken with two net shots.

The dry spring and summer dropped all duck populations to near zero and most nesting attempts were foiled by receding water. Four mallards and two blue-wings were successful in bringing off broods. Mallard populations began to rise in late August and built up to 66,000 by the first of December to remain there the rest of the year. Other ducks only occur in token numbers at the end of the period.

Shore birds and waders moved in strong in the spring, but were stymied by the dry weather bug-a-boo and numbers decreased to only a token population for most of the summer. Avocets and great blue herons were most abundant of the larger species, with white-rumped sandpipers and snowy plovers being most common of the smaller birds. Killdeer remained fairly common all season, one even attempting to nest on the

gravel roadside near the office. The nest was victimized by a predatory road grader.

Unusual bird sightings gave spice to the season. A rare visitor was found near the Little Salt Marsh when a cinnamon teal stopped in with some blue-wings. Later a new bird was found on the Little Marsh - a western grebe was observed for several minutes through a 20X scope. Of great interest is a bird picked up after the close of the period. On the week of January 4 thru 8, 1965 a red-breasted goose; Branta ruficollis (Pallas), was observed by four members of the refuge staff. It was feeding with a flock of about 1800 Canadas and 250 white-fronts one mile north of the office. The bird was observed with a 20X scope for about 30 minutes and identified from A Coloured Key to the Wild-fowl of the World, Peter Scott, 1957, W.R. Royle & Son, Ltd., London. According to our source of information the bird should be on the Caspian Sea now.

Another rare bird visited us Nov. 1, when three whooping cranes dropped in about a mile SE of the refuge -- two adults and one very young chick. When last seen they were 20 miles south and Aransas bound.

Sandhill cranes peaked at 1850 in early October, 10 days after the first sighting of the season, and the migration continued until Nov. 29, much later than usual. Total counted were 5,942.

B. Upland Game Birds.

We went into the spring with a large population of both bobwhite and ring-necked pheasant, and with the promise of a bumper crop of young. All went well until early broods began to come off, at which time the water holes began to dry up en-mass. This slowed the pheasant nesting to a near stop and cut into chick survival of those already hatched. The effect was not so hard on bobwhite, which required less water and brought off good broods. Survival was apparently good, as quail are now numerous and several coveys of 30 or more birds have been seen.

Mourning doves did not fare so well. Nesting season opened with a sufficient population, but dry weather and high winds played hob with nests and eggs. Each time incubation was started we would have a few days of high winds and the birds would have to start over. Dryness finally brought a halt to all efforts until cooler weather when some birds tried again. Success was not overwhelming.

C. Big Game Animals.

White-tailed deer are definitely on the increase. No formal deer surveys have been made, but casual sightings are very common now. Browse sign and tracks indicate that we have a total population of around 75 animals. One sighting was of a herd of 9 followed closely by a herd of 6 and tracks are now common around the office and residential area. In spite of local reports, we have yet to locate any mule deer in the area.

D. Fur Animals, Predators, Rodents and Other Mammals.

Raccoon (Procyon lotor) and striped skunk (Mephitis mephitis) are the only two common furbearers of this locale. Sign (and scent) of these ubiquitous mammals is extremely common, padding out vehicle tracks almost overnight in the back-trails. On the few stream banks the raccoon track is occasionally accompanied by the relatively rare mink (Mustela vison). Evidence of mink usually restricted to sign on stream banks, was reinforced by a broad daylight sighting of a hunting mink near the Big Salt Marsh last spring. The mink seemed oblivious of the observer, but was careful not to remain in the vicinity of the trail too long.

Beaver (Castor canadensis) population seems to be about static, but the beasts are exerting their influence more strongly. When water began to flow out of the structure of Unit # 5, we began to watch for flow in Rattlesnake Creek across the pavement four miles north. When this failed to materialize after sufficient time, investigation showed ol' Castor, disgusted with the dry summer, had decided to take action. He had a dam the width of the stream and was hoarding a water supply. When the water continued to rise he strategically placed a spillway on one side of the dam to drain the excess water on down the creek. This is the first instance of damming by this animal on the refuge. The beaver are still working on salt cedar, fresh cutting being noted periodically, and if this becomes a well established habit all we can say is "may their tribe increase" -- up to a point.

Our muskrat (Ondatra zibethicus) population has dropped to a very low point. This from a combination of a low point in the cycle and the drying of nearly all their habitat.

The black-tailed jackrabbit (Lepus californicus) is not so numerous now as last year's population indicated, being seen only rarely toward the end of the period after a slow beginning last winter and spring. The eastern cottontail (Sylvilagus floridanus) is another tale. Road sign is common, and on rainy or foggy mornings they are seen at a rate of about 12 to the mile near the shelter belts on the south end of the refuge.

The eastern fox squirrel (Sciurus niger) continues to increase slightly, every shelter belt having its crown-work of nests. Some timber has even shown more squirrels than birds on occasion, but this only happens on such occasion as the Audubon Bird Count when dicky-birds are desired.

The rodent population seems to be about the same as last year, Ord's kangaroo rat (Dipodomys ordii) holding the prime position in numbers. Other rodents are holding approximately the same numbers as last year.

Opossum (Didelphis virginiana) continue in about the same numbers as before, sign being frequently seen and the animals being seen fairly often. No evidence of weasel (Mustela sp.) has been seen through the year, but a small population probably remains in the area. Badger (Taxidea taxus) seem to be on the increase with daylight sightings becoming rather commonplace. One badger was observed about 10:00 a.m.

working a prairie dog town -- the daytime feeding not being observed before in this area. Road sightings are not uncommon.

Prairie dogs (Cynomys ludovicianus) are static population-wise, the towns neither spreading nor being deserted -- with the exception of one which is being flooded as a result of our new impoundments being filled.

Coyotes (Canis latrans) are holding steady, scats being scattered along roads and dikes. Daytime sightings are common in the area of prairie dog towns and along roadsides, but only occasional control work is required, mostly to pacify locals who are certain that the refuge is a reservoir for predators which pour out and slaughter their stock.

An occasional feral house cat is seen, but these usually present no opportunities for control.

E. Eagles, Hawks, Owls and Crows.

At the end of the period we only had about 25 eagles by actual count, however, casual sightings indicate that we may have nearer 30. They are 95% bald eagle, leaning heavily toward immature - a good sign of increasing population. Only one mature golden eagle was seen, most sightings in this area usually being immature. This is in line with last year's population rise - 26 eagles being counted in December of '63, the population zooming to 50 the next month. Thus we expect a continued rise in bald eagles for some time now.

All predacious birds followed the annual routine closely in population trends. The period started with a seasonal population of American rough-legged hawks and the odd ferruginous rough-leg. Most common were the marsh hawks a little later followed by the spring migration of sparrow hawks, some of which remained throughout the summer. Swainson's hawks began to show in early spring, replacing the marsh and rough-legged hawks. Mississippi kites moved in on schedule in mid-spring, but failed to reach large numbers throughout the season. Red-tailed hawks showed a seasonal increase in the warmer months, but an odd red-tail was noticed throughout the year, as was the odd sparrow hawk. The fall sparrow hawk migration came through at about the time of the return of the marsh hawk and the disappearance of the Swainson's hawk. Rough-legs followed in a few weeks. One duck hawk was seen in the late summer months, and about half a dozen prairie falcons were seen in the cool months. Sightings of Cooper's hawks and Sharp-shinned hawks are becoming more common, possibly because of the good quail population of the dry summer.

We are holding a static population of great horned owls, and toward the end of the period made several sightings of short-eared owls and screech owls.

Crows followed the usual trend, relatively low in the extreme temperature months of summer and winter, and many, many in the spring and fall. This fall it was discovered that the new refuge residences were directly in line with a roost flyway, and each p.m. saw a raucous symphony at sun-down.

F. Other Birds.

Song bird populations ran about as usual throughout the year, no unusual sightings being made. The Christmas Audubon Bird Count was carried out and showed 39 species and 65,226 individual birds, leaning mostly to meadow larks and various sparrows.

G. Fish.

The period started with a good population of channel cat, bullhead, carp and various "trash fish", but with the drying of all our pools and Rattlesnake Creek, the population was wiped out, leaving a feast for the scavengers. The low water and dying fish gave considerable aroma to the air-somewhat like low tide at the salmon cannery. The population is slowly returning now.

H. Reptiles and Amphibians.

The usual reptiles of the area were out in the usual numbers this summer. These include various garter snakes (Thamnophis spp.), one of which (a Plains garter snake) was observed to go into convulsions, roll over and die when an attempt was made to remove it from the Asst. Mgr's. garage. Examination showed an injury in the caudal region, so it may be that the spinal cord was injured causing the actions noted. Bull snakes (Pituophus sayii) were seen in the usual numbers, while the unusual number of western massasauga (Sistrurus catenatus) sighted was probably due to the snake-shy engineers and construction workers flooding the refuge through the summer months. Ornate box turtles (Terrapene ornata) and mud turtles (Kinosternon sp.) were monotonously common on the roads of the area.

I. Disease.

No diseased birds or animals have been noted or reported.

III. REFUGE DEVELOPMENT AND MAINTENANCE

Construction began on dikes and canals, resulting in 10 1/3 miles of dike and approximately 3 1/2 miles of canal with a short mileage of furrow ditches thrown in. Structures included one large three barrel structure with screw operated lift gates, two large radial gates, 12 lift gates (corrugated pipe) and 11 common stop log structures.

Two and 1/4 miles of new fence were set in place, another half mile nearly completed, and about three miles of old fence removed. About three miles of temporary electric fence was installed to facilitate the construction work -- and reset several times after being torn down by dozing 'dozer operators. Another contract resulted in two standard residence buildings, one oil house and a new office building.

A winding drive was bladed out to the new buildings -- about 1/2 mile.

Also connected with the new office area was a well pit dug, floored, walled, roofed and put into operation, and the rejuvenation of Quivira Real Property # 2, storm cellar, which was begun.

Refuge wheat planting amounted to 150 acres and wheat transferred amounted to 1,891 bushels.

A military surplus IHC 350 tractor was received and rejuvenated to take some of the heavier duties formerly assigned to the Ford tractor. The MM#1 was transferred to Hagerman NWR. Also received from surplus was a 1956 Willys CJ-6 jeep from Wichita Mtns. Refuge which took considerable rejuvenating. It was received in R-4 condition and made operable to fill our needs more economically than would a new or larger vehicle.

B. Plantings.

3. Upland Herbaceous Plants. Planted 747 acres of retired agricultural land to a mixture of 1/2 lb. weeping love, 1 lb. sand love and 1 1/2 lb. blackwell switchgrass to the acre. About 200 acres of this and other seeded land was mowed to allow better growth.

4. Cultivated Crops. The refuge share of cooperative farmer's wheat was 945 bu. and 1,000 bu. were harvested by the refuge. The refuge-farmed crop yield was about 8 bu./acre, while the average yield for Stafford Co. was 19.0. This extreme low yield was brought about by a complete winter kill over much of our acreage and heavily damaged wheat on other areas. Of our complete harvest 750 bu. were shipped to Salt Plains Refuge and 1141 bu. shipped to various points via Mallard Freight Lines, Bureau truck from Tishomingo NWR.

Refuge planted wheat for this season amounted to 150 acres and the cooperative farmers acreage brought the total to 500 acres. The refuge planted 12 acres of milo which was left in the fields for browse, and retained 93.3 acres of the cooperatively grown milo (total of 279.9 acres) in the fields for like purpose.

C. Collections and Receipts.

Harvested wheat receipts totaled 945 bu., as listed above. All refuge milo was left in the field. 1090 lb. of alfalfa seed was the refuge share of the 2180 lb. harvested on the refuge.

D. Control of Vegetation.

No chemical control was carried out on vegetation this period. Mechanical control amounted to 200 acres of newly planted grassland carried out to retard weed growth, conserve moisture and promote grass growth. Mowing was carried out in May, June and July using a Servis Brush Cutter w/Case "400" tractor. Approximately 4 miles of roadside were mowed to increase visibility by removing sunflower stalks.

E. Planned Burning. None.

F. Fires.

None on refuge property.

IV. RESOURCES MANAGEMENT

A. Grazing.

Total grazing was slightly lower this year than last, being 2,965 AUM in CY 1964 as compared to 3,057 AUM in CY 1963. Rate was \$2.00 per AUM resulting in a revenue of \$5,930.00. The slight drop was brought about by a poor grass year. We began the year below average on rainfall and remained so throughout the growing season. All cattle were removed from refuge pastures at the end of the season (Sept. 30) with the exception of one permittee who began grazing late.

B. Haying.

Permittee hay harvest was completed on schedule, and in spite of the poor grass crop totaled out a 887.3 tons of hay from 575 acres, for a total revenue of \$1,369.20. Demand for hay was strong.

C. Fur Harvest.

None.

D. Timber Removal.

None.

E. Commercial Fishing.

None.

F. Other Uses.

None.

V. FIELD INVESTIGATION OR APPLIED RESEARCH

A. Progress Report.

Work on the refuge herbarium was resumed by the Student Trainee, but after one week a severe case of asthma forced his return to the Colorado highlands. Seems that breathing is a necessity.

VI. PUBLIC RELATIONS

A. Recreational Use.

To date there is no recreational development of the refuge, thus

recreational use is limited to drive-through tours. The majority of our sight-seers are local residents stopping to observe concentrations of feeding birds or returning unsuccessful hunters stopping to gaze longingly at same. Ducks and geese concentrated to feed on wheat strips along the roadside north of the Little Salt Marsh were a sight which prompted many an old timer to stop and comment on the amount of "meat out there".

Our winter concentration of eagles was an attraction to some "drivers-through" as was an occasional concentration (4 or 5) of deer in the same area. Deer were of particular interest to local sportsmen as Kansas still has no open season on the animal (one is being considered by the state for next year).

Canal and dike construction and the attendant publicity drew a considerable number of people to "see what the fuss is all about".

B. Refuge Visitors.

Following is a list of official visitors. Not listed are those with business of a recurring nature such as permittees, cooperators, neighbors, etc. A. J. (Jim) Robinson, GMA, makes frequent stops incidental to his work as do State Game Protectors Hitt and Hurst, thus are unlisted as are our 300+ friends and neighbors who visited us for open house at our new office building.

<u>Date</u>	<u>Name</u>	<u>Affiliation</u>	<u>Purpose</u>
1/10	Dr. D. H. Parmelee	Emporia STC	Goose trapping disc.
1/30	Austin Beard	Br. of Realty	Land acquisition
2/12	Cheryl Caudill	Hutchinson News	Wildlife Pics.
	Duane Kerr	" "	" "
	Neal Whitaker	" "	" "
2/20	Dr. Parmelee	Emporia STC	Net cannon testing
	H. A. Stephens	" "	" "
	Marvin Schwilling	Cheyenne Bottoms Refuge	" "
	Floyd Palmer	" "	" "
2/25	Bob Osthoff	Br. of Engineering	Survey
	Bill Ryan	" "	" "
	Bob Ballou	W/L Mgt. Biologist	Bird Banding
	Ray Buller	Flyway Biologist	" "
3/16	Monte M. Dodson	Dist. Agent, PARC	Courtesy call
	Warren Spikes	Hugoton Contracting	Const. Work
	Herb Vesper	" "	" "
4/3	J. Lisle Morris	Realtor	Land appraisal
4/8	R. B. St. John	Br. of Realty	" "
4/8	J. Lisle Morris	Realtor	" "
4/10	Tony Opstedal	Br. of Engineering	Pre-Const. survey
	Bill Ryan	" "	" "
4/15	Willis Stanton	Procurement Officer	Inspection
4/28	Louis Stroup, Jr.	Central States Const.	Const. Work
5/7	Bill Doyle	Br. of Engineering	Pre-Const. conf.
5/27	Phil Morgan	Br. of Refuges	Courtesy
6/4	Richard Hitch	Ref. Mgr. Salt Plains	Load of Wheat

<u>Date</u>	<u>Name</u>	<u>Affiliation</u>	<u>Purpose</u>
6/4	Bob Pearson	Asst. Mgr. Salt Plains	Load of Wheat
6/5	Dr. Richard Johnston	Univ. of Kansas	Shore Bird Study
6/17	Bob Pearson	Asst. Mgr. Salt Plains	Load of Wheat
6/23	Claude Chalfant	Atty., Hutchinson, Ks.	Information
8/11	Harve Combs	Br. of Engineering	Dike Survey work
	Al Kalaczik	" "	" "
	Norm McLaughlin	" "	" "
8/12	Mr. P. Berg	Stockholm Sweden	Tour
	Mrs. Richard Dame	Stafford, Kansas	"
8/27	Bob Pearson	Salt Plains NWR	Load of Wheat
9/3	Fred L. Hall	Buffalo Museum of Science	Information
9/14-15	Lynn Greenwalt	Br. of Refugees	Rent Survey
9/28	Kent Britt	Hutchinson News	Information
10/7	Dick Droll	GMA, Ft. Worth, Tex.	Enforcement
	A. J. Robinson	GMA, Hutchinson, Ks.	"
10/22	Everett Erhart	Ks. Bd. of Agriculture	Tour
	Clark Stocking	"	"
	W. H. Sunderlund	"	"
	J. E. Schrock	"	"
	Harold Bennett	"	"
	Robert Johnson	"	"
	Dale Jacob	"	"
	Nick Soyregin	"	"
	Dale TenEyck	"	"
	Guy E. Gibson	"	"
	Paul Ballinger	"	"
	D. B. Kissinger	"	"
	Don Schmanke	"	"
	Bruce W. Frisbie	"	"
	Franklyn J. Ellyson	"	"
	J. Maurice Street	"	"
12/8	Kenneth George	Foreman, Kirwin NWR	Property pickup
	Leslie Beaty	Asst. Mgr., Kirwin NWR	"
	Ray Buller	Flyway Biologist	Migration Studies
	Austin Beard	Br. of Realty	Land Acquisition
12/9	Richard J. Fisher	Br. of River Basin Studies	Courtesy
	Wilfred B. Kucera	"	"
12/11	Les Houser	State Game Protector	"
12/14	Vernon Drake	Reno Co. SCS Committee	"
12/24	Richard O. Hager	KFF&G Commission	Goose Trapping info.

C. Refuge Participation.

Programs and tours were presented to the following groups using movies and/or slide visual aids as the need occurred.

<u>Date</u>	<u>Who</u>	<u>What</u>	<u>Number</u>
1/25	Stafford Grade School Teachers	Refuge tour	4
2/22	Stafford Inter. School	Refuge tour	34
2/29	Stafford Inter. School	Refuge tour	44
3/5	Stafford Chamber of Comm.	Talk	15

<u>Date</u>	<u>Who</u>	<u>What</u>	<u>Number</u>
3/7	Stafford Inter. School	Refuge tour	15
3/10	Local Contractors	Tour of Const. Sites	2
4/7	Riverside Garden Club, Sterling, Ks.	Film & Talk	18
4/7	Stafford Co. Rifle & Pistol Club	Film & Talk	25
4/9	Lions Club, Stafford, Kansas	Film & Talk	19
4/16	Green Ridge, Ks. 4-H Club	Conservation Talk	40
4/20	Stafford Inter. Biology Class	Slide Talk	25
4/30	Stafford Jr. Hi. Science Class	Film & Talk	20
5/13	Ladies Civic Club, Sylvia, Kansas	Film & Talk	12
5/18	Grade School, Raymond, Kansas	Refuge Tour	15
5/18	McPherson Jr. Hi. Biology Class	Refuge Tour	20
6/23	Lion's Club, Sterling, Kansas	Film & Talk	25
6/25	Lion's Club, Stafford, Kansas	Film & Talk	19
7/25	4-H Grass Identification and Range Judging School held on refuge w/official assistance		30
8/12	Mr. Per Berg, Stockholm, Sweden	Refuge Tour	2
9/20	Open House, new office & residences		328
10/17	B.S.A. Troop 337, Hutchinson, Ks.	Refuge Tour	33
10/22	Kansas Board of Agriculture, Div. of Water Resources	Refuge Tour	16
10/22	Stafford Lions Club & Guests	Film & Talk	55
11/10	Kansas Ducks Unlimited, Wichita, Ks.	Talk	50
11/17	YWCA, Preston, Kansas	Film & Talk	56
12/1	POE Club, Stafford, Kansas	Film & Talk	18
12/10	Chamber of Commerce, Stafford, Ks.	Talk	15
12/23	Engaged in special Audubon Christmas Bird Count		
12/28	Mr. Gee, Vo-Ag. Inst. & group	Refuge Tour	5
12/28	Mrs. Robert Vasey & group	Refuge Tour	5

D. Hunting.

No hunting is yet allowed on the refuge, however local goose hunters take strong advantage of the feeding flights of the birds to and from the refuge in season. Hunters roost on the off-refuge roads, spot a outbound flight and try to follow it out. From all appearances this type of hunting was of greater help to the local gasoline dealers than to the sporting goods dealers, as this type of hunting did not show any outstanding success. Influencing hunter success was the heavy feeding on the refuge and the close proximity of the state hunting area at Cheyenne Bottoms near Great Bend. Approximately 400 geese are estimated to have been brought down around the refuge by more conventional methods. This is about a 400% increase from 1963. Dove shooting was about average this year, the population being mostly made up of older birds leaving the area later than usual. Early fall rains formed small water holes which kept the birds well scattered for most of the season.

Pheasant and quail shooting was slightly better than average near the refuge, but word is that a few miles out neither was as good as could be desired. Ducks fed heavily on outlying milo fields and offered considerable opportunity for sneak shooting, but no reports were heard of outstanding success at this maneuver.

Not much interest is expressed in rabbit and squirrel hunting in this locale, so the supply of game is only lightly touched.

E. Violations.

No hunters were actually apprehended on refuge property in spite of a few used hulls being picked up along interior roads. Intensive patrol work was carried out throughout periods of high hunter area use. Some misplaced fishermen were apprehended on recently posted refuge property and when informed that the area was now closed, cheerfully moved on. There were no repeats.

F. Safety.

Regular safety meetings were held discussing material from Regional and Bureau safety publications and problems of local and seasonal application. Open discussions usually followed the formal discussion and interesting and useful points were brought out.

No lost time accidents were recorded this year - let's hope it stays that way.

VII. OTHER ITEMS

A. Items of Interest.

Possession was gained of Tracts # 17, 31, 35, 42, 42a, 45, 56 and proper steps taken to protect them, i.e., posting, etc. We still have to acquire a little over seven sections to complete the refuge.

Oil exploration continues in the area, one new producer being drilled, along with one dry hole on the refuge, one duster about a mile south of the refuge, and two producers 1/2 mile or less from the refuge boundary. One producing well on the refuge went dry and was abandoned.

Assistant Manager Folzenlogen's replacement arrived. Ron Sullivan and wife moved in from the Wichita Mns. Refuge by way of a two month stay at Tishomingo Refuge.

All appropriate news releases were sent to the four area newspapers.

Two incentive awards were awarded to Maintenance man Darrell Keesling, one for a chain rack for farm tractors and one for a suspension modification to remove the "shimmy" from a 1957 Dodge Power Wagon.

Open house was held upon acceptance of our new office building and 328 friends, neighbors and free-loaders poured in during a three hour period to observe, compliment, shoot the bull and eat

free cake. ~~We~~ feel that we made a lot of new friends and reinforced old friendships, at the same showing off the excellent work of a well-liked local contractor. The blow-out was a huge success.

B. Photographs.

Following the NR forms.

Respectfully Submitted
January 20, 1965

Ronald S. Sullivan
Ronald S. Sullivan, Asst. Ref. Mgr.

Approved By:

Joshua J. Harman
Joshua J. Harman, Refuge Manager

Reviewed By:

Date: 1/2

William T. Krumm
Chief, Division of Wildlife
1/28/65

Reviewed By: _____

Date: _____

3-1750
Form NR-1
(Rev. March 1953)

Wash.

W A T E R F O W L

REFUGE Quivira Nat'l. W/L Refuge, Stafford, Kansas

MONTHS OF January TO April, 1964

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	1000	1395	1395	1450	1500	1600	4010	6000	456	384
Cackling										
Brant										
White-fronted	50	54	50	50	300	2400	14350	8000	5	653
Snow										6
Blue										
Other										
Ducks:										
Mallard	34200	39816	40514	17503	20163	11034	3724	5600	452	1823
Black										
Gadwall					3				7	5
Baldpate							4	350	20	8
Pintail	5	13		1		201	793	40000	1266	3947
Green-winged teal					60	200	10	75	12	226
Blue-winged teal										5
Cinnamon teal										
Shoveler									26	3
Wood										
Redhead										782
Ring-necked					2		2		28	20
Canvasback										
Scaup									10	185
Goldeneye									8	
Bufflehead						1	2		14	19
Ruddy									11	28
Other										
Common Merganser	35	110	91		2550	2050	1035	400	31	159
Coot:									1	18

Int. Dup. Sec.,
Wash. D. C. 37944

3 -1750a
 Cont. NR-1
 (Rev. March 1953)

WATERFOWL
 (Continuation Sheet)

REFUGE Quivira Nat'l. W/L Refuge, Stafford, Kansas

MONTHS OF January TO April, 1964

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total
	11	12	13	14	15	16	17	18		
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	196	503							139,083	
Cackling										
Brant										
White-fronted	171	337							181,910	
Snow	1	3							70	
Blue										
Other										
Ducks:										
Mallard	1281	1652	720	915	268	56	65		1,258,803	
Black										
Gadwall		4				5			168	
Baldpate	51	89	289	315	511	275	165		11,770	
Pintail	1136	2451	1027	1196	1452	159	110		371,399	
Green-winged teal	81	91	219	120	115	31			8,792	
Blue-winged teal		63	182	220	201	116	135		6,731	
Cinnamon teal		1							7	
Shoveler	79	250	367	653	318	281	293		16,100	
Wood										
Redhead	733	90	22	6					11,131	
Ring-necked						5			399	
Canvasback										
Scaup	110	131	78	83	31	298	120		7,392	
Goldeneye										
Bufflehead	31	11	51	26	10	232			3010	
Ruddy	59	16	557	127	185				8,981	
Other										
Common Merganser	33	15	12	7					45,696	
Hooded Merganser				2					11	
Coot:	18	85	71	167	61	19	65		3,787	

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese	324,093	18,360	
Ducks	1,753,696	16,425	
Coots	3,787	167	

SUMMARY

Principal feeding areas shallow ponds, grain fields,
green wheat browse

Principal nesting areas _____

Reported by _____

Joshua J. Harman, Refuge Manager

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1750
Form NR-1
(Rev. March 1953)

W A T E R F O W L

REFUGE Quivira Nat'l. W/L Refuge, Stafford, Kansas

MONTHS OF May TO August, 1964

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
<u>Swans:</u>										
Whistling										
Trumpeter										
<u>Geese:</u>										
Canada										
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
<u>Ducks:</u>										
Mallard	127	127	66	66	97	97	53	53	8	39
Black										
Gadwall										
Baldpate	65	65	37	37	10	10				
Pintail	80	80	4	4	9	9				9
Green-winged teal										
Blue-winged teal	135	135	54	54	38	38	33	33		48
Cinnamon teal										
Shoveler	293	293	62	62	7	7				
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup	10	10	13	13		13				
Goldeneye										
Bufflehead										
Ruddy			7	7		7				
Other										
<u>Coot:</u>	87	87			5					

3 -1750a

Cont. NR-1

(Rev. March 1953)

WATERFOWL (Continuation Sheet)

REFUGE Quivira Nat'l. W/L Refuge, Stafford, KansasMONTHS OF May TO August, 1964

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total	
	11	12	13	14	15	16	17	18			
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada											
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard	30	72	424	424	16	330			14,322	4	20
Black											
Gadwall											
Baldpate						30			1,778		
Pintail	9	533	675	675	216	588			20,174		
Green-winged teal						25			175		
Blue-winged teal	48	75	1027	1027	218	355			22,890	2	10
Cinnamon teal											
Shoveler						12			5,152		
Wood											
Redhead											
Ring-necked											
Canvasback											
Scaup									413		
Goldeneye											
Bufflehead											
Ruddy									147		
Other											
Coot:									1253		

(over)

	(5)	(6)	(7)	
	Total Days Use	Peak Number	Total Production	SUMMARY
Swans				Principal feeding areas
Geese				
Ducks	65,051	2,126	30	Principal nesting areas Small ponds and marsh areas
Coots	1,253	87		

Reported by Joshua J. Farman, Refuge Manager

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

MONTHS OF September TO December, 1964

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total	
	11	12	13	14	15	16	17	18			
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	3562	1389	1930	2000	3711	2858	1250		135,072		
Cackling											
Brant											
White-fronted	1085	948	250	50	70	174	125		51,002		
Snow	69	17	5	2	2				1,155		
Blue	15	3	2	1	1				399		
Other											
Ducks:											
Mallard	22500	4935	66000	65000	60000	60000	62020		2,593,276		
Black											
Gadwall	1000	75	1						8,451		
Baldpate	1000	82							28,971		
Pintail	5000	1351	2000	1500	150	60			143,820		
Green-winged teal	800	755			5	15	15		47,642		
Blue-winged teal											
Cinnamon teal											
Shoveler	350	75							3,118		
Wood											
Redhead	300	150							4,963		
Ring-necked											
Canvasback											
Scaup			2		3		1		42		
Goldeneye						1			7		
Bufflehead		3					5		56		
Ruddy											
Other Comm. Merganser			1	3	7	58	5		518		
Coot:									4,844		

	(5)	(6)	(7)	
	Total Days Use	Peak Number	Total Production	SUMMARY
Swans	:	:	:	Principal feeding areas <u>Winter wheat fields (green brown)</u>
Geese	<u>187,635</u>	<u>7,731</u>	:	<u>and mile fields.</u>
Ducks	<u>2,835,987</u>	<u>68,004</u>	:	Principal nesting areas _____
Coots	<u>4,844</u>	<u>647</u>	:	

Reported by _____

Joshua J. Harman, Refuge Manager

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1750
Form NR-1
(Rev. March 1953)

W A T E R F O W L

REFUGE Quivira Nat'l. W/L Refuge, Stafford, Kansas

MONTHS OF September TO December, 1964

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
<u>Swans:</u>										
Whistling										
Trumpeter										
<u>Geese:</u>										
Canada						200	175	160	513	1548
Cackling										
Brant										
White-fronted						3			300	1282
Snow						10				60
Blue						7				28
Other										
<u>Ducks:</u>										
Mallard	15	339	121	585	454	167	489	2975	3685	21183
Black										
Gadwall					6	8		3	130	
Baldpate		30		620	55	67	225	529	610	915
Pintail	216	588	217	730	400	90	550	689	2160	4845
Green-winged teal			3	675	75	50	225	281	3410	497
Blue-winged teal	218	355	321	2257	368	111	608	2583	141	
Cinnamon teal										
Shoveler		12					3	25		9
Wood										
Redhead										
Ring-necked									4	255
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
<u>Coot:</u>										
				647	5	40				

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Quivira Nat'l. W/L Refuge Months of January to April 1956
Stafford, Kansas

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Pied-billed Grebe	present on	1/2	35	4/1/64	10	4/30/64				300
Fared Grebe	1	4/8	1	4/8	1	4/8				25
White Pelican	120	4/8	560	4/22	560	4/22				5000
Double-crested Cormorant	18	4/8	18	4/8	3	4/22				25
Great Blue Heron	14	4/8	18	4/8	present					36
Black-crowned Night Heron	18	4/22	18	4/22	18	4/22				60
Snowy Egret										10
American Bittern	1	4/22	1	4/22	present					45
Wilson's Phalarope	12	4/15	150	4/22	150	4/22				3000
Little Blue Heron										4
Glossy Ibis										4
II. Shorebirds, Gulls and Terns:										
Sandhill Crane	85	3/4	300	3/18	54	4/1				8,000
Greater Yellowlegs	15	4/8	71	4/22	present					500
Lesser Yellowlegs										75
American Avocet	2	4/15	51	4/22	present					150
Ring-billed Gull										35
Franklin's Gull	78	4/15	234	4/22	present					800
Killdeer										300
Dowitcher	3	4/1	20	4/22	20	4/22				100
Common Snipe	3	4/1	29	4/8	present					150
Baird's Sandpiper	42	4/8	117	4/15	present					450
Snowy Plover	4	4/8	31	4/22	present					150
Long-billed Curlew	14	4/22	14	4/22	present					85

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u>					
Mourning dove	70 present	400	4/20 present		750
White-winged dove					
IV. <u>Predaceous Birds:</u>					
Golden eagle	present		1 3/26		4
Duck hawk					
Horned owl	35 in residence			8 14	49
Wedge-tailed Short-eared Owl	10 1/1	10 1/1	1 3/11		25
Bay Burrowing Owl	15 4/8	30 present	present		40
Crow	100 1/1	100 1/1	35 present		1000
Bald Eagle	present 1/2	50 1/6	5 3/18		65
Sharp-shinned Hawk	5 1/1	15 3/11	1 4/8		30
Cooper's Hawk	present	40 resident			60
Swinson's Hawk	1 4/11	20 summer resident			50
American Roughlegged	present	8 3/1	1 3/31		15
Prairie Falcon	2 1/2		1 3/18		5
Marsh Hawk	present	15 4/30			35
Mississippi Kite	1 4/26	10 4/30			12

Reported by.....
Joshua J. Harman, Refuge Manager

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1751
Form NR-1A
(Aug. 1952)

MIGRATORY BIRDS
(Other than Waterfowl)

Refuge Quivira NWR, Stafford, Kansas Months of May to August 1964

(1) Species Common Name	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production		(6) Total
	Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young
I. Water and Marsh Birds:									
White Pelican	Present		1	6/5	1	6/5			35
Great Blue Heron	Present		20	8/26	Present				40
Yellow-crowned Night Heron	2	5/21	2	5/21	2	5/21			4
Common Egret	1	8/5	1	8/5	1	8/5			6
Curlew	Present		10	5/21	10	5/21			23
Wilson's Phalarope	Present		750	6/11	12	6/16			2300
Western Grebe	1	6/5	1	6/5	1	6/5			1
Cormorant	2	5/21	2	5/21	2	5/21			4
II. Shorebirds, Gulls and Terns:									
Snowy Plover	25	5/21	85	8/5	9	8/26			110
Greater Yellowlegs	Present		200	8/26	Present				500
Lesser Yellowlegs	Present		215	8/19	Present				500
American Avocet	Present		75	8/19	Present				200
Franklin's Gull	3	5/21	90	6/5	3	6/16			95
Killdeer	Present		50	8/31	50	8/31			90
Dowitcher	7	7/8	70	8/12	21	8/26			275
Upland Plover	1	5/21	9	7/8	9	7/8			20
Black Tern	90	6/5	90	6/5	3	6/16			200
Common Tern	3	5/21	17	6/16	3	8/5			25

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u>					
Mourning dove	Present	3250	8/31	Present	500
White-winged dove					4,000
IV. <u>Predaceous Birds:</u>					
Golden eagle					
Duck hawk					
Horned owl	Present				4
Magpie					18
Raven					
Crow	Resident				25
					75
Sparrow Hawk	Present	20	5/6	Present	30
Marsh Hawk	Present	3	8/31	Present	5
Swainson's Hawk	Present	30	8/31	30	60
Mississippi Kite	2	6/4	12	8/19	2
				8/26	7
Reported by _____					

Joshua J. Harman, Refuge Manager

INSTRUCTIONS

(See Sec. 7532, Wildlife Refuges Field Manual)

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first migration record for the species for the reporting period.
- (3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated species days use (average population X no. days present) of refuge during the reporting period.

3-1751
Form NR-1A
(Aug. 1952)

MIGRATORY BIRDS
(Other than Waterfowl)

Refuge Quivira Nat'l. W/L Refuge Months of September to December 195 64

(1) Species Common Name	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production		(6) Total
	Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Estimated Use
I. Water and Marsh Birds:									
White Pelican	Present		350	10/21	350	10/21			3,000
Great Blue Heron	Present		16	9/10	6	10/29			35
American Bittern	Present		6	9/10	1	9/24			12
Eared Grebe	Present		8	9/24	8	9/24			25
II. Shorebirds, Gulls and Terns:									
American Avocet	Present		38	9/24	28	10/6			250
Lesser Yellowlegs	Present		40	9/24	19	10/6			300
Greater Yellowlegs	Present		22	10/6	22	10/6			250
W/rumped Sandpiper	Present		215	9/17	45	9/24			650
Ring-billed Gulls	Present		740	10/14	Present				1,250
Franklin's Gulls	Present		575	10/14	575	10/14			2,000
Killdeer	Present		35	10/14	1	12/2			75
Sandhill Crane	12	9/26	1850	10/6	300	11/19			6,000
Snowy Plover	Present		1000	9/25	17	10/2			3,000

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u>					
Mourning dove	3500	present	3500	9/1	50
White-winged dove				12/31	4,500
IV. <u>Predaceous Birds:</u>					
Golden eagle	1	12/9	2	12/23	2
Duck hawk					12/31
Horned owl	20	Resident			5
Magpie					20
Raven					
Crow	80	present	14,000	10/29	150
Bald Eagle	2	11/17	25	12/29	25
Osp rey	1	9/10	1	9/10	1
Short-eared Owl	1	10/21	25	12/31	25
Sparrow Hawk	8	9/1	160	10/11	5
Marsh Hawk	8	9/1	50	12/2	25
Swinson's Hawk	30	9/1	30	9/1	1
Red-tailed Hawk	1	10/14	5	10/29	1
Rough-legged Hawk	2	10/29	15	12/31	15
Prairie Falcon	2	11/17	4	12/23	1
Ferruginous Hawk	1	11/17	1	11/17	1
INSTRUCTIONS (See Sec. 7632, Wildlife Refuges Field Manual)					

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first migration record for the species for the reporting period.
- (3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated species days use (average population X no. days present) of refuge during the reporting period.

3-1750b

Form NR-1B

(Rev. Nov. 1957)

UNITED STATES

DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITATRefuge Quivira For 12-month period ending August 31, 1964Reported by J. J. HarmanTitle Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type Acreage	(3) Use-days	(4) Breeding Population	(5) Production
A	Crops	Ducks		
	260	1,172,038		
	Upland	Geese		
	1220	313,278		
	Marsh	Swans		
	110			
B	Water	Coots		
	610	15,135		
	Total	Total		
	2560	1,500,751		
	Crops	Ducks		
	23	252		
C	Upland	Geese		
	822			
	Marsh	Swans		
	90			
	Water	Coots		
	25	7		
D	Total	Total		
	960	259		
	Crops	Ducks		
	850	1,817,762	30	15
	Upland	Geese		
	3810	71,099		
E	Marsh	Swans		
	80			
	Water	Coots		
	60	1,750		
	Total	Total		
	1,800	1,920,611		
F	Crops	Ducks		
	700	56		
	Upland	Geese		
	1840	6,475		
	Marsh	Swans		
	20			
G	Water	Coots		
	2560	6,531		
	Total	Total		
	1,110	1,106		
	Upland	Geese		
	3620	81		
H	Marsh	Swans		
	80			
	Water	Coots		
	50			
	Total	Total		
	1,160	1,190		
I	Crops	Ducks		
	700	211,576	30	15
	Upland	Geese		
	3910	9,611		
	Marsh	Swans		
	720			
J	Water	Coots		
	5360	9,016		
	Total	Total		
	160	230,203		
	Upland	Geese		
	1380	602		
K	Marsh	Swans		
	40			
	Water	Coots		
	20			
	Total	Total		
	1600	602		

(over)

INSTRUCTIONS

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge grand totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August Narrative Report.

- (1) Area or Unit: A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.
- (2) Habitat: Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.
- (3) Use-days: Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.
- (4) Breeding Population: An estimate of the total breeding population of each category of birds for each area or unit.
- (5) Production: Estimated total number of young raised to flight age.

3-1752

Form NR-2

(April 1946)

UPLAND GAME BIRDS

Refuge Quivira Nat'l. W/L Refuge
Stafford, KansasMonths of January to April, 19 64

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Marshes, brush, shelterbelts, fence rows, wild plum thickets, willow thickets, tall prairie grasses	11			50-50				2,000	
Bobwhite	-do-	12.2			50-50				1,800	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- | | |
|---------------------|--|
| (1) SPECIES: | Use correct common name. |
| (2) DENSITY: | Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks. |
| (3) YOUNG PRODUCED: | Estimated number of young produced, based upon observations and actual counts in representative breeding habitat. |
| (4) SEX RATIO: | This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available. |
| (5) REMOVALS: | Indicate total number in each category removed during the report period. |
| (6) TOTAL: | Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons. |
| (7) REMARKS: | Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested. |

* Only columns applicable to the period covered should be used.

3-1752

Form NR-2

(April 1946)

UPLAND GAME BIRDS

Refuge Quivira NWR, Stafford, KansasMonths of Mayto August, 19 64

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Marshes, brush, shelterbelts, fence rows, wild plum thickets, willow thickets, tall prairie grasses	7.3	15	1500	50-50				3,000	
Bobwhite	-do-	6.2	20	2250	50-50				3,800	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Quivira Nat'l. W/L Refuge Months of September to December, 19 64

(1) Species	(2) Density		(3) Young Produced	(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd. Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Marshes, brush, shelterbelts, fence rows, wild plum thickets, willow thickets, tall-grass prairie lands	7.2		50-50				3,000	
Bobwhite	" "	6.2		50-50				3,800	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1753
Form NR-3
(June 1945)

BIG GAME

Refuge Quivira Nat'l. W/L Refuge

Calendar Year 1964

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
			Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
Common Name	Cover types, total Acreage of Habitat	Number												
White-tailed Deer	Shelterbelts, tall prairie grasses & timber claims	25										75	75	60-40

Remarks:

Reported by

Joshua J. Harman, Refuge Manager

INSTRUCTIONS

Form NR-3 - BIG GAME

- (1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.
- (2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated total number of young produced on refuge.
- (4) REMOVALS: Indicate total number in each category removed during the year.
- (5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.
- (6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.
- (7) TOTAL REFUGE POPULATION: Give the estimated population of each species on the refuge at period of its greatest abundance and also as of Dec. 31.
- (8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

116000

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Quivira Nat'l. W/L Refuge, Stafford Year ending April 30, 1961

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs					(5) Total Popula- tion	
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re- stocking	For Re- search	Share Trapping			Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	
								Permit Number	Trappers Share	Refuge share				
Opossum	Upland woods & range 15,000 acres	100												150
Raccoon	22,000 acres	175												125
Mink	Streams & marshes 10,000 acres	500												20
Skunk	22,000 acres	100												220
Badger	Upland Sandhills 6,000 acres	200												30
Coyote	22,000 acres	290												75
Black tail	Upland pastures													
Prairie Dog	100 acres	1												100
Fox Squirrel	Shelter Belts, 100 a.	1												100
Beaver	Rattlesnake Creek	3												15
Black tail	Upland Range													
Jackrabbit	15,000 acres	100												150
Cottontail	Upland Range and Shelter- Belts, 18,000 acres	4												4500
Muskrat	Ponds, 500 acres	10												50
Weasel	Streams and marshes, 10,000 acres	750												13

List removals by Predator Animal Hunter

* List removals by Predator Animal Hunter

REMARKS:

Reported by Joshua J. Harman, Ref. Mgr.

INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

- (1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)
 - (2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
 - (3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headings listed.
 - (4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.
 - (5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.
- REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

PUBLIC RELATIONS

(See Instructions on Reverse Side)

Refuge Quivira Nat'l. W/L Refuge, Stafford, KansasCalendar Year 1964

1. Visits

a. Hunting None b. Fishing None c. Miscellaneous 1,000 d. TOTAL VISITS 1,000

1a. Hunting (on refuge lands)

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl			
Upland Game			
Big Game			
Other			

Number of permanent blinds _____

Man-days of bow hunting included above _____

Estimated man-days of hunting on lands adjacent to

refuge 750

1b. Fishing (area open to fishing on refuge lands)

TYPE OF AREA	ACRES	MILES
Ponds or Lakes		
Streams and Shores		

1c. Miscellaneous Visits

Recreation _____ Official _____

Economic Use _____ Industrial _____

2. Refuge Participation (groups)

TYPE OF ORGANIZATION	On Refuge		Off Refuge	
	NO. OF GROUPS	NUMBER IN GROUPS	NO. OF GROUPS	NUMBER IN GROUPS
Sportsmen Clubs			2	75
Bird and Garden Clubs			1	18
Schools	6	132	2	45
Service Clubs			6	186
Youth Groups	2	63	1	40
Professional-Scientific			1	18
Religious Groups				
State or Federal Govt.	1	16	2	30
Other	4	14		

3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases	17	Radio Presentations	1
Newspapers (P.R.'s sent to)	4	Exhibits	
TV Presentations		Est. Exhibit Viewers	

INSTRUCTIONS

Item 1: Total of a, b, and c, equal d.

"Visit" - definition. Any person who is on refuge lands or waters during a day or part thereof for the purpose of: hunting, fishing, bird-watching, recreation, business or economic use, official visit, or similar interest. INCLUDE - those who stop within the refuge while traveling on a public highway because of an interest in the area. EXCLUDE - persons engaged in oil or other industry not directly related to the refuge, persons using refuge as most direct route or principal avenue of traffic, and those boating on navigable rivers or the Intercoastal Canal, unless they stop to observe wildlife on the refuge.

Computing visits. Where actual counts are impractical, "sampling" is used with midweek and week-end samples varied by season or weather. A conversion factor of 3.5 (of passengers per car) is used when accurate figures are not available. Each refuge will develop a conversion factor for boats based on range of usage. Count a camper once for each 24-hour period or fraction thereof.

Item 1a: Acres - of refuge open for each type of hunting.

Managed hunts require check in and out of hunters, issuance of permits, or assignment of blinds.

Other - INCLUDE crow, fox, and similar hunting.

Lands adjacent to refuge. Normally considered within 1 mile or less of boundary, unless established sampling procedures cover a wider area. For big game hunting, the distance may be greater.

Item 1b: Acres of streams open to fishing, if practical; otherwise just miles open. Information on "shores" is primarily for coastal fishing.

Item 1c: Recreation. INCLUDE photography, observing wildlife, picnicking, swimming, boating, camping, visitor center use, tours, etc. TOTAL Recreation, Official, and Economic Use visits under Item 1.

Industrial. INCLUDE persons engaged in industry, i.e., oil industry or factories. EXCLUDE these from Item 1.

Item 2: INCLUDE the "On Refuge" groups in Items 1c and 1. In "Off Refuge" column include only those group meetings in which refuge employees actually participate. EXCLUDE these from Items 1c and 1.

Item 3: Exhibits - INCLUDE displays, fairs, parades, and exhibits OFF the refuge; EXCLUDE those ON.

3-1757
Form NR-7
(April 1946)

PLANTINGS
(Marsh - Aquatic - Upland)

Refuge Quivira Nat'l. W/L Refuge, Stafford, Kansas Year 19464

Species	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount & Nature of Propagules	Date of Planting	Survival	Cause of Loss	Remarks
Sand Lovegrass Weeping Lovegrass Blackwell Switchgrass	Tract # 16, 17, 18, 21, 37, 49, 53, 64, 65, 71, 83, 85, 103	3#/acre	747 acres	375# weeping love 750# Sandlove 1225# Switch	March & April	Poor to Fair	Extremely Dry Season	Planted to establish grass stands & rebuild existing pastures

TOTAL ACREAGE PLANTED:

Marsh and aquatic.....
Hedgerows, cover patches.....
Food strips, food patches.....
Forest plantings.....

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Quivira Nat'l. W/L Refuge County Stafford State Kansas

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water- fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./Tons	Acres	Bu./Tons			
Winter Wheat	277.5	2835 bu.	92.5	945 bu.			370 a.	525 a. winter wheat available for browse	525
Winter Wheat (govt.)			130	1000 bu.			130 a.		
Milo	187	3720 bu.			93	1860 bu.	280 a.		
Milo (govt)					12	300 bu.	52 a.		
								Fallow Ag. Land	535

No. of Permittees: Agricultural Operations 5 Haying Operations 9 Grazing Operations 16

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
Alfalfa	25.5	55	\$76.50	1. Cattle	593	2965	\$5930.00	4600
				2. Other				
				1. Total Refuge Acreage Under Cultivation				1320
Hay - Wild	861.8	520	\$1292.70	2. Acreage Cultivated as Service Operation				445

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

3-1570
NR-88
(4/54)

REFUGE GRAIN REPORT

Refuge **Quivira Nat'l. W/L Refuge, Stafford, Kansas**

Months of **January** through **December**, 19**54**

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Winter Wheat	290	1945	2235	1861	225	0	2086	149		149	0

(8) Indicate shipping or collection points _____

(9) Grain is stored at **Refuge Headquarters Bins.** _____

(10) Remarks _____

*See instructions on back.

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (4) A total of columns 2 and 3.
- (6) Column 4 less column 5.
- (7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

3-1759
Form NR-9

COLLECTIONS AND RECEIPTS OF PLANTING STOCK
(Seeds, rootstocks, trees, shrubs)

Refuge Quivira Nat'l. W/L Refuge, Stafford, Kansas Year 1964

Species	Collections				Receipts		Total Amounts on Hand	Amount Surplus
	Amount	Date or Period or Collection	Method	Unit Cost	Amount	Source		
Alfalfa (Kansas Common)	1090#	8/15/64	Combine	N/C (Share Crop)			1090#	500
Weeping Lovegrass				.50/lb.	50#	Open Market		
Hybrid Milo				.20/lb.	100#	Open Market		



DARRELL KEESLING SCORES AGAIN — Here he is shown being presented a check from the Department of the Interior by J. J. Harmon, Manager of the Quivira Wildlife Refuge. Keesling is a maintenanceman on the refuge. (Courier Staff Photo)



REFUGE INCOME — Manager Jim Harman of the Quivira Wild Life Refuge is here shown presenting a check for \$1,684.80 to Eleanor Young of the County Treasurer's Office. Slated for use by schools of the county and for roads the payment is a portion of the

income from Refuge land and is derived from grazing, hay and oil income. Manager Harman expects the share to grow considerably in the forthcoming years.

(St. John News Photo)



4-H Grass and Range Judging School



Keesling Incentive Award for Chain Rack

JAN 1965



Tract # 65 (Newly Acquired) was fenced - -

JAN 1965



- - - and Seeded to Grass

JAN 1965



The Spring Tornado Strikes - -

JAN 1965



- - and Keesling Strikes Again



JAN 1965

Ol' Castor - Ambitious - - or Just Hungry?